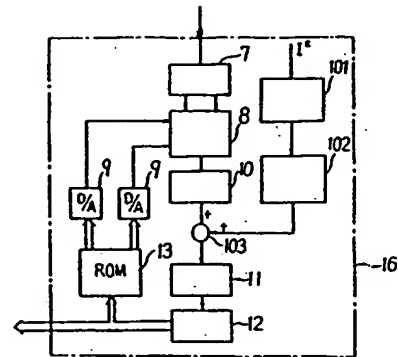## (54) PHASE DETECTOR FOR COMMUTATORLESS MOTOR

(11) 59-17892 (A) (43) 30.1.1984 (19) JP
(21) Appl. No. 57-127285 (22) 21.7.1982
(71) TOKYO SHIBAURA DENKI K.K. (72) KIHEI NAKAJIMA
(51) Int. Cl³. H02P6/00

PURPOSE: To gain stable commutation in a commutatorless motor by calculating the phase variation due to armature reaction from an armature current reference value or an actual armature current value, adding them to a phase deviation to compare continuously in phase.
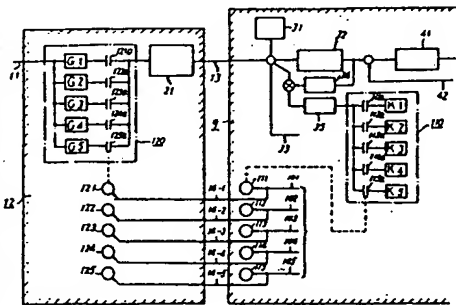
CONSTITUTION: An armature reaction arithmetic circuit 102 calculates the phase variation component of the motor voltage from the current value applied from a current value arithmetic circut 101 which calculates the actual current value by the current reference value I* from a speed controller, not shown. This calculated output and the phase deviation output obtained through a motor voltage detector, a 3-phase/2-phase converter 7, a phase difference calculating circuit 8 and a deviation amplifier 10 are added by an adder 103, and inputted to a V/F converter 11. The analog signal from the converter 11 is converted to the phase θ of digital amount by the counter 12, inputted to an ROM13 and an effective commutation leading angle setter, not shown, and the sinusoidal signal corresponding to the phase θ outputted from the ROM13 is inputted through a D/A converter 9 into the phase difference calculating circuit 8.

(54) CONTROL DEVICE FOR MOTOR

(11) 59-17893 (A) (43) 30.1.1984 (19) JP
(21) Appl. No. 57-126575 (22) 16.7.1982
(71) MITSUBISHI DENKI K.K. (72) YASUO MEDE(3)
(51) Int. Cl³. H02P7/00,B21B37/02

PURPOSE: To suppress the abrupt variation in the speed of a motor by varying the gain of drooping characteristic smoothly in time series.

CONSTITUTION: An automatic plate thickness controller 12 outputs a control signal 13 in response to the plate thickness deviation signal 11, and a power source 9 controls the current of the motor in response to the control signal 13. Relays 111~115 are operated by signals 101~105 in response to the operating conditions in the power source 9, the gain of a gain altering circuit 110 is selected by the contacts of the relays to select the prescribed drooping characteristic. On the other hand, in the controller 12, the relays 121~125 are operated by the signals 101~105, and the gain of a gain altering circuit 120 is altered by the contacts of the relay. A primary delay circuit is provided at the output side of the gain altering circuit 110, and the abrupt variation in the speed is prevented when the gain of the drooping characteristic is varied.

(54) CONTROL DEVICE FOR PROPORTIONAL CURRENT CONTROL TYPE DC MOTOR

(11) 59-17894 (A) (43) 30.1.1984 (19) JP
(21) Appl. No. 57-125472 (22) 19.7.1982
(71) PIONEER K.K. (72) KAZUNORI ISHIZUKA
(51) Int. Cl³. H02P7/28

PURPOSE: To suppress the ripple component for a power source by superposing the ripple component of the power source inverted in phase on the voltage drop due to proportional resistor.

CONSTITUTION: An inverting amplifier 2 inverts the phase, amplifies and outputs the ripple components produced at the power supply terminal B₁ due to the internal impedance Z₀ of a DC power source 1 and the load variation in the DC motor M. This output voltage is supplied through an AC coupling capacitor C₁ to the terminal J₁ of a proportional resistor R_T. An operational amplifier OP controls transistors Q₁, Q₂ in response to the deviation between the potential difference between the terminals J₁ and J₂ varying in response to the variation in the load of the DC motor and a reference voltage. In this manner, the ripple voltage capable of being produced on power supply terminal B₁ can be sufficiently suppressed.